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Author(s): Henry Trueman Wood and H. Warington Smyth
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Journal of the Society of Arts,

No. 2,582. Vol. L.

FRIDAY, MAY 16, 1902.

All communications for the Society should be addressed to the Secretary, John-street, Adelphi, London, W.C.

Notices.

ANNUAL GENERAL MEETING.

As His Majesty's Coronation is to take place on Thursday, the 26th of June, the Council, acting under the provisions of Bye-law No. XLIV., have resolved to postpone the date of the Annual General Meeting from Wednesday, June 25th, to Wednesday, July 9th.

The regular notice required by the Bye-laws will be issued in due course.

Henry Trueman Wood,
Secretary.

CONVERSAZIONE.

The Society's Conversazione will take place at the Royal Botanic Gardens, Regent's-park, on Tuesday evening, June 24th, from 8.30 to 12 p.m.

Each member is entitled to a card for himself (which will not be transferable), and a card for a lady. These cards will be forwarded in due course. In addition to this, a limited number of tickets will be sold to members of the Society, or to persons introduced by a member, at the price of 5s. each, if purchased before the date of the Conversazione. On that day the price will be raised to 7s. 6d.

These tickets will only be supplied to persons presenting members' vouchers (which can be obtained from the Secretary), or a letter of introduction from a member.

Members can purchase these additional tickets by personal application, or by letter addressed to the Secretary. In all cases of application by letter a remittance must be enclosed. Each ticket will admit one person, either lady or gentleman.

Light refreshments (tea, coffee, ices, claret cup, &c.) will be supplied.

COVERS FOR JOURNAL.

For the convenience of Members wishing to bind their volumes of the *Journal*, cloth covers will be supplied post free for 1s. 6d. each, on application to the Secretary.

Proceedings of the Society.

TWENTY-FIRST ORDINARY MEETING.

Wednesday, May 14, 1902; Major-General John Barton Sterling in the chair.

The following candidates were proposed for election as members of the Society:—

Birch, John de Gray, J.P., Umtali, Rhodesia, South Africa.
Darroll, George, 16, Hout-street, Cape Town, South Africa.
Halsted, Professor George Bruce, The Neomon, 2407, Guadalupe-street, Austin, Texas, U.S., America.
Pearson, Sam Garforth, Axim, Gold Coast Colony, West Africa.
Richardson, Stuart, M.I.E.E., 117, Brougham-street, Wellington, New Zealand.
Talley, Thomas W., M.A., D.Sc., Tuskegee, Alabama, U.S., America.
Woodburn, J. Allan, care of Rezende, Limited, Suffolk-house, Cannon-street, E.C., and Umtali, Rhodesia, South Africa.

The following candidates were balloted for, and duly elected members of the Society:—

Fleming, C. A., Executive Engineer, Punjab Irrigation Department, Shahpur, Punjab, India.
Lawson, Sir Charles Allen, 15, Evelyn-gardens, S.W.
Munster, B. A., No. 23, Yokohama, Japan.
Porter, H. G. 22 and 23, Princes-street, Hanover-square, W.
Baldrey, Robert John, Ootacamund, Nilgiris, India.
Brooks, Joseph, F.R.A.S., F.R.G.S., Hope Bank, Nelson-street, Woollahra, *vid* Sydney, New South Wales, Australia.
Burnham, Daniel Hudson, The Rookery, Chicago, U.S., America.

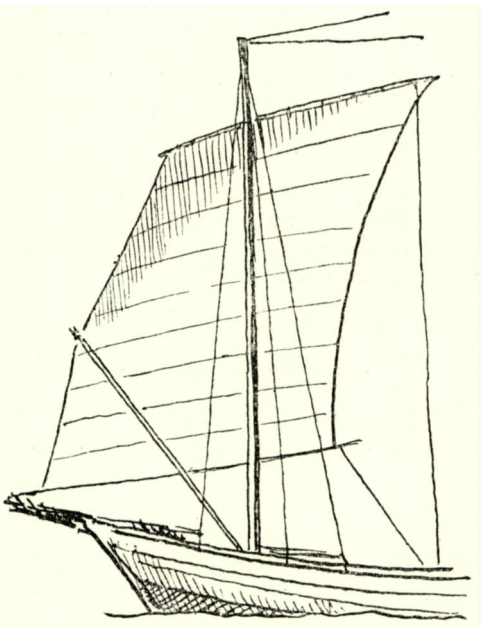
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BOATS AND BOAT BUILDING IN THE MALAY PENINSULA.

By H. Warington Smyth.*

Having regard to the wide reputation which the Malays have earned for themselves as a maritime people in Eastern seas, it is at first sight not a little remarkable that so far as the Malay Peninsula is concerned, they have developed no really able type of sea-going boat.† European writers have credited the Malays with building boats, the lines of which are unsurpassed by European types; yet so far as the writer has been able to discover, no specimen answering to such a description is to be met with in the Peninsula. The characteristics of build are small displacement, hollow lines, V-shaped sections and sharp floors, shallow draft, lack of beam, and a consequent want of stability and weatherliness. An enquiry into local conditions, however, explains much. Two main factors have been at work, influencing the development of boats, and tending to produce the results arrived at. In the first place, the rivers, which almost invariably constitute the ports of the Peninsula, are, with scarcely one exception, protected by very shallow bars of sand or mud, which make it impossible for a deep-bodied boat to obtain shelter within them. These bars are caused by the vast quantities of detritus brought down by the rivers in flood time, as a result of the very heavy tropical rainfall;‡ detrital fans of mud are deposited around their mouths, over which the mangroves steadily grope their way out to sea; the current keeps open a channel, which is of fair depth within, but shallow and shifting upon the bar, varying often with the strength and direction of the wind prevailing outside.* Safely ensconced within these creeks, protected from observation by the mangroves, and from pursuit by the shallow bars, the old Malay pirates scarcely 60 years ago used to watch the seaboard traffic of the Straits and swarm out upon their chosen prey. When pursued by the boats of Her Majesty's ships, they would make good their escape by just bumping over a friendly bar, where their pursuers could not follow them, and then turning aside up some of the innumerable creeks that intersect the mangrove swamps near the river mouths. Hence came the necessity for shallow draft and small tonnage.



Fore-mast, with Square Sail.

A second factor, scarcely less potent, so far as the west coast of the Peninsula, from Penang to Singapore, is concerned, has been the variable character of the light breezes prevailing in the Straits of Malacca. The monsoon currents of the neighbouring seas do not blow with any regularity or force, owing to the protection afforded by the island of Sumatra on the south-west, and the Peninsula on the east; and the usual light winds are varied only by occasional south-westerly squalls of great

* The paper was written by Mr. H. Warington Smyth (who is now in South Africa), from information supplied by Mr. W. W. Skeat, who presented a large collection of Malay boat models to the Archæological Museum at Cambridge, from which many of the illustrations in the present paper are taken.

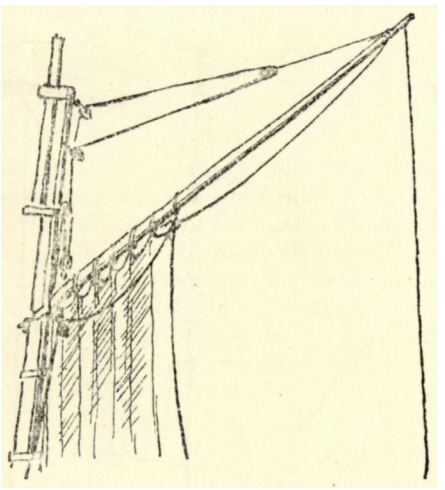
† The question of what constitutes a "boat," properly speaking, is not always easy to decide. Many of the Malay craft, up to 70 feet in length, may, owing to their narrow beam and shallow draft, be legitimately styled boats, especially as they are by no means invariably decked in. The line which divides a boat from a sea-going vessel, is, on the whole, very arbitrary, and varies really with the seaworthiness, or sea-keeping power of the type under discussion. For instance, the Penzance lugger of 40 feet long, or the Norwegian pilot "boat," of somewhat similar dimensions, is, from a sea-keeping point of view, not a "boat" at all, while the native canoe, a hundred feet long, as certainly falls within the category for all purposes.

‡ Upwards of 110 inches per annum, in some inland districts.

* In many parts of the Peninsula, the on-shore monsoon causes wholesale alterations in the banks and channels of these bars, and leaves enormous deposits of sand in the river entrances, through which the fresh water has to cut a new channel to the sea, nearly every season.

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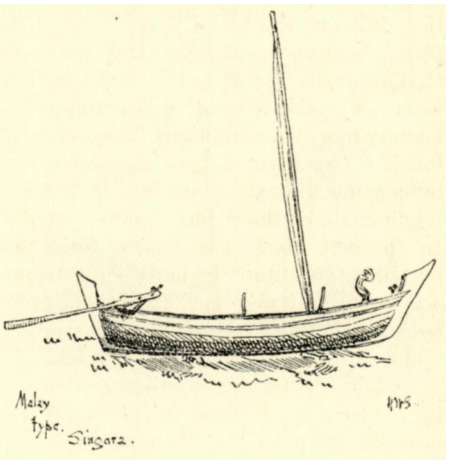
violence but short duration, known as "Sumatras." A third factor was the great strength of the tides, which on the Selangor coast-line have a rise and fall of as much as 20 feet. The lot of the sailing vessel in this neighbourhood is thus precarious; racing tides and baffling winds and calms make progress very slow. Hence propulsion by oars or paddles was the first necessity of the old-time Malay seaman in the Straits; sails were merely an occasional convenience. He soon found that a long light craft, having plenty of accommodation along its sides for paddlers, was by far the best adapted to the navigation of these waters, and, moreover, had the sailing vessel at its mercy nine times out of ten—a



TOP-MAST AND GAFF.

very pleasing feature in the eyes of the Malay at the time when the Straits of Malacca served as the high road for all the sailing tonnage of the Eastern trade. Moreover the lack of freeboard suitable for manual propulsion was not a serious danger in a locality where heavy weather is so little known. Hence it came about that the "long canoe" form of craft established itself as the most suitable type, and that not only, as was natural, for the river navigation of the interior, but also for the estuaries, and the more open waters of the Straits. Steam, and the growth of the British power in the Straits have combined to make impossible the old buccaneering pursuits dear to the heart of the Malay sailor, and he is now constrained to ship as a folks'le hand in Penang or Singapore steamers, or make sailing voyages up and down the coasts as a commonplace trader or peaceful fisherman.

The foregoing remarks are not, however, entirely applicable to the east coast of the Peninsula, where during the prevalence of the north-east monsoon in the China sea, strong gales with heavy sea and violent rain blow havoc upon the unprotected coast line. At first sight then, we might have expected to find some powerful sea-keeping boats on this coast; but in fact, we find practically the same types as on the sheltered waters of the Malacca Straits. The explanation is easy. During the prevalence of the on-shore monsoon, the bars at the entrance to the rivers, which form the only ports, are a whirling mass of breaking seas, through which, only during rare lulls in the weather, can any vessel pass with safety.* From the shelving beaches thrown up by the



monsoon it is, of course, impossible to launch a boat. Hence from October or November to February or later, according to the strength of the weather, the whole coast is shut up, so far as local navigation is concerned. An occasional high-sided Chinese junk will now and then venture along the coast, but communication in most cases becomes easier across the Peninsula, and the men of Patani and Singora find it simpler to cross overland to Kedah to reach the west coast, than to attempt to get out across the dangerous bars, and through the heavy sea raging on the eastern coast.

During the open season the weather is not unlike that in the Straits, bringing light sea and land breezes, varied by occasional squalls. Then the Malay fishermen run their long canoes down the beach and put to sea again,

* To such an extent is this the case, that the north-east monsoon is called by the Malays, "Musim Tutop Kuala," or the "shut-port [i.e. close] season."

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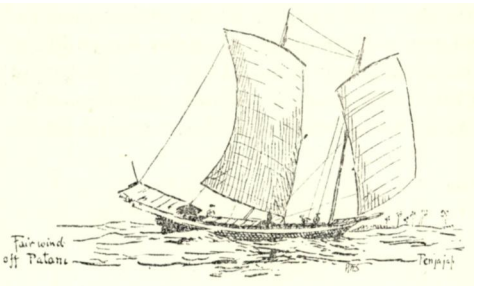
and the traders creep out with new mat sails to resume their coasting voyages.

Owing to lack of ports free from shallow bars large displacement is impossible; and for the fishermen, light canoe-like craft are preferred, as they launch easily from the beach, and can be paddled at high speeds to come up with fish. Hence deep-bodied boats which can beat to windward are again absent on this coast; and as the centre board and the leeboard is not known, the paddle retains its importance for working to windward. Though hardly coming under the heading of boats it should be remarked that for some trades, involving long voyages and calls at deep water ports, the advantages of big-bodied craft are fully recognised by the Peninsular Malays, and that between Singapore and Siamese ports,

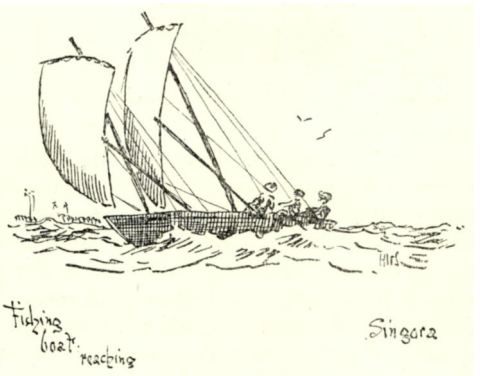


for instance, fine vessels of 200 tons, built on European lines, are frequently to be met with. They are rather nondescript craft, often with overhanging clipper stems and deck-houses galore. The masts are generally very light and crooked-grown spars; the rigging and gear aloft make up in quantity what is lacking in quality. They are generally rigged with two nearly equal-sized masts and bowsprit on which from one to three jibs are set. The mainsail and foresail are either Chinese lugs or on the European fore and aft plan, the gaff being a standing spar controlled by vangs, and the sail being set by hauling out along it and taken in by brails to the mast, topsails being used. The sails are of light material, when they are not, as in the case of regular Chinese or Malay lugs, made of matting; and they seldom set very flat.

The true Malay sail, however, is nothing more than an adaptation of the original and primitive square sail, as used alike by the sailors of ancient Egypt, of Rome, and of Scandinavia; and this sail is used still in the majority of the Malay fishing craft and small traders, matting being the material used. A boom along the foot is almost as necessary as a yard along the head. The Malays, by the simple expedient of tilting the sail forward, so as to bring the tack right to the deck, have long converted this square-cut sail into the most powerful of lifting sails on a wind. The dipping lug is set taut along the luff by



a spar bowline fitting in a cringle, the lower end of which comes to the deck abaft the mast. The yard being too light to stand alone by the wind, is invariably controlled by a vang. The unhandiness of the dipping lug in tacking is felt to the full with this sail, owing to the stiffness and weight given to it by the material of which it is made, and the boom along the



foot; and the operation is such a long one, that the anchor is often thrown over while the manœuvre is gone through with the two big sails.

The devotion of the Malays to top hamper in the shape of raised deck houses and outrigged superstructures over the bow and stern, is shared with many other Eastern races, and is no doubt largely owing to the lack of body in their craft. In boats with sharp bottoms and fine lines, the cargo, whether of fish or merchandise, has often to lie high; and con-

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sequently all the accommodation for the crew is high up, and every foot of extra space which can be built on in this manner is so much added to their comfort, and to convenience in working the vessel. The galleries built out over the bows of the larger craft are used for working and storing the anchors, just as was the case in the vessels of the classical and mediæval seamen, and as still remains the rule in the Chinese junks; and in boats which are often so lean about the quarters the little stern galleries and rails add greatly to the comfort and safety of the steersman and of men handling the mainsail.

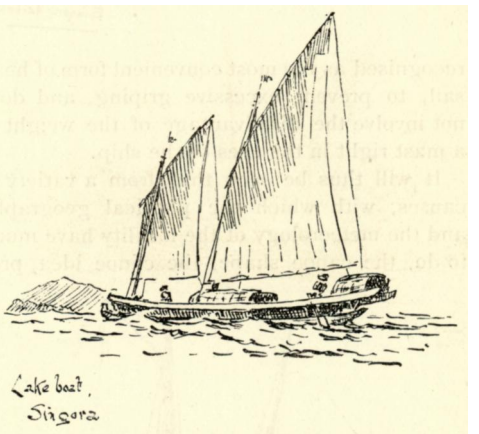
Even in the smallest canoes, which most of us would think crank under any circumstances, there is generally in the East a grating (or lattice) forming a raised floor, within an inch or two of the top of the gunwale, upon which



the crew is accommodated. It can certainly not be claimed that such an arrangement conduces to stability; yet such good watermen are these warm water sailors, and the Malays in particular, that even long coasting voyages are undertaken in such craft without any apparent anxiety as to the result.

The *Penjajap* on the east coast is often a rather unsuccessful imitation of European build, with transome stern, half concealed by the overhanging stern galleries. There is generally plenty of show, but the boat is very wall-sided, with insufficient beam, which facts combine to spoil her appearance on a close inspection, although she looks smart enough a little distance off. The writer has seen these boats nearly on their beam ends when caught by a heavy squall at anchor, though with nothing but their slender masts aloft, a fact largely caused by the want of under-water body in the hull, and the amount of top-hamper by way of accommodation on deck. A bundle of bamboos along under each gunwale frequently adds some much needed stability, and provides a store from which to renew broken spars. Yet crank as these craft seem the Malays manage to make their way for long distances in them with very few accidents. No fact could form more conclusive evidence of their pluck and skill.

The Malay, like a true seaman, takes a great pride in his vessel, and if his ideas of ornamental decoration do not always accord with those of the West, he has, at all events, never been guilty of producing such scarecrows of the seas as many of the tramp steamers at this moment lying in the port of London. In rigging, as already hinted, he is partial to slender lofty masts, and if his vessel is large



enough he indulges in two masts of nearly equal height, to which is generally given a very smart rake forward. Under Chinese sails, the advantages of which, over the dipping lug, have been recognised by many on the east coast, the Malay may be distinguished from the Chinaman at sea, when yet hull down, by the equal size of the big sails, and the invariable absence of any mizen. The hull is also low and long, with no many-storied castle aft, but merely a *kadjang* or thatch awning, over the raised, overhanging poops, or a simple *dandan* or gallery. There is something of the yachtsman in the Malay, and he is much addicted to graceful little vanities about the stern-head and stern-post of his small boats; and so greatly does he hold the figure-head in estimation, that a class of boat is often named after the form given to the stern-head. European influence may now be seen at work to a

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greater or less degree in almost every class of rig in the ports of the Peninsula, but the Malay more than any other Oriental, has adopted the jib, or three-corned staysail. This essentially modern product of Western Europe, he has adopted not only in the large traders already referred to, but also in the Kolek or "sea canoe" of Singapore, in which also the old Malay lug has been altogether discarded, especially for racing purposes, in favour of the sprit sail. The stay sail is



recognised as the most convenient form of head sail, to prevent excessive griping, and does not involve the disadvantage of the weight of a mast right in the eyes of the ship.

It will thus be seen that, from a variety of causes, with which the physical geography and the meteorology of the locality have much to do, the canoe shape, the canoe idea, pre-

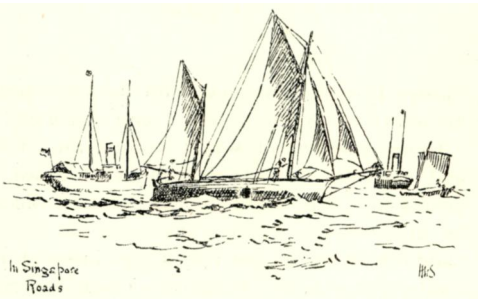


dominates in most of the boats of the Malay Peninsula, it may, in fact, be said that the maritime enterprise of its inhabitants obviously commenced with the canoe and continued with the canoe, and that its highest form of development has resulted in a craft of larger dimensions, which yet in all essential particulars still remains—a canoe.

The nomenclature employed by the Malays for their boats appears to the traveller at first to be unnecessarily intricate. Closer attention, however, soon shows that the name, as has indeed been already suggested, is very rarely derived from the rig, as is so much the case in Europe, but rather from distinctions, which often seem to the stranger to be com-



paratively insignificant, in the hulls or build. Nearly every water-side settlement of any importance having developed its own ideas of ornamentation or of construction, it is not to be wondered at, that boats, which might well be classed under one head, as far as all essential particulars are concerned, yet come under the observation of the traveller under widely different names, differing often merely with the locality of their origin. For instance, a



number of otherwise very similar boats are named (*a*) simply after the form of figure-head, to the frequency of which reference has already been made, *e.g.*, the Hornbill-boat,* the Crocodile-boat†; or (*b*) from some peculiarity in construction, *e.g.*, the Patani "Half-decked"‡ boat (literally, Boat with decked fore-part),‡ or the "civet-fence§" boat, which is nothing but a

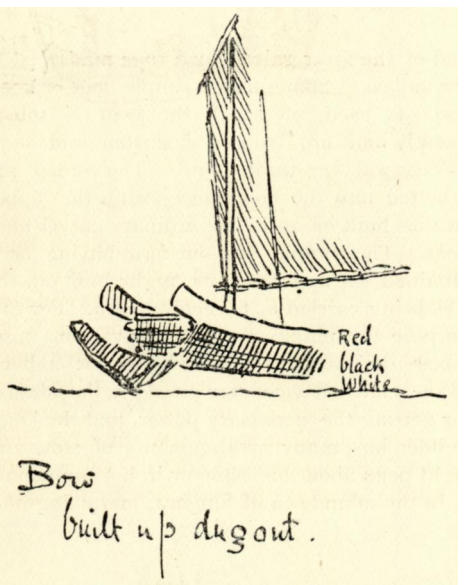
* "Prahu Enggang." † "Prahu Buaya."
‡ "Katop 'Luan." § "Pagar Tenggâlong."

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form of the type generally known as "Penjajap," to which a peculiarly ornamental bulwark or rail is given.

A large number of boats, as might be expected, are distinguished by the use for which they are built—*e.g.*, the "boat for going up-stream,"* and various types of fishing boat;† others are of purely local significance—*e.g.*, Banting [an Achinese type],—while several appear to be derived from European names—*e.g.*, "skonar" [schooner], and "pinis" [pinnace], and perhaps "kichi" [ketch], "skuchi" [scotchy], and "katar" [cutter].

It is noticeable that, in most of their larger built boats, the Malays have adopted the comparatively modern method of slinging the



rudder by metal fastenings on the stern post, known afloat as "gudgeons" and "pintles."

In many of their dug-out canoes, in the kolek, and some of the non-Europeanised types of fishing boats‡ of Selangor and the East Coast, for instance, the rudder consists of the simple paddle held on the quarter, or a paddle-shaped rudder slung at the head on a stout upright, and held at the neck by a rattan lashing. This is the earliest and simplest form of rudder known to man. It was that used in the ships of the earliest navigators of the Mediterranean, of whom we have record,§ and it remained, with slight modifications, as the usual steering contrivance of the Egyptians, of the Greeks and Romans, and of the Danes and Saxons and Normans, down to mediæval times. It is much used in some of the craft of the Northern portion of the Gulf of Siam, and it may be noted that the rudder is always used on the lee quarters, if, as is usual, the boat carries a weather helm, this position giving far greater power and deeper immersion.

The Malays do not use oars to a great extent, except with the bigger decked vessels. These oars are somewhat heavy about the loom, and have often sharp pointed blades, shaped rather



like a broad angular spear head. They are generally worked in a rattan grommet, to a sharp quick stroke, any other kind of stroke being impossible, owing to the friction in the grommet, and the shortness of the oar. The "standing up and pushing" (or "salmon-stroke") position, common with the Siamese and Chinese, and in the Mediterranean, is on the whole, rarely adopted by the Malays. In the smaller craft, with low free-board, the paddle is used, the blades in some localities having the same angular spear shape.

Boat Building.

The Malays usually follow the general Indo-Chinese method of construction, in the first stages, at all events, of their smaller boats.

A selected tree is laboriously hollowed out by the adze, until the sides are sufficiently

* Prahu pemudik, from mudik; to go up-stream.
† Prahu ikan, or per-ikan, from ikan; fish.
‡ *e.g.* the Kakap Jeram.
§ We have records of craft in Egypt so steered from the time of the Third Dynasty (about 6,000 B.C.)

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thinned to open out under pressure, and the judicious application of heat, by a slow burning ember fire beneath the bottom. The fore and after ends are roughly modelled with the adze. Before proceeding further, the hull is at this stage frequently soaked for some days in the water. In many parts of Siam and Burma, the presence of a monastery can almost be certainly predicted by the little fleet of hewn modelled hulls lying sunk beside a landing place, a sure sign of the boat-building propensities of the brethren of the yellow robe close by. When sufficiently soaked, the opening out process begins.

Dug-out boat being opened out.—Various methods are used for this purpose. In this case water is placed inside the dug-out hull, and hot embers are placed upon the ground underneath her, and kept at the required temperature, until the sides have opened out



sufficiently to take ribs, knees, and crosspieces. The sides in falling out come down to the bow and stern, and your up-river canoe is now complete.

1. Sampan s'lit, a dug-out canoe with wash strake raised on the inside.
2. Chemplong, a fairly deep bodied canoe.
3. Jalor, a shallow dug-out canoe.

Another method of opening the dug-out hull is often used. To the perpendiculars on each side crosspieces are securely lashed under the hull. A similar number of cross-pieces are placed above the hull over the lower ones, and connected by a strong double rattan rope. Through these rattans hardwood levers or handles are placed to give a purchase, and are then twisted round and round, bringing the ends of the crosspieces together. This pressure is kept constant, while water and hot embers are applied as necessary.

Two dug-outs may sometimes be seen being cut from one log; the inner and smaller one is worked out by the driving of stout wedges. In order to facilitate the heavy work of driving home these wedges, a low scaffolding is erected alongside one of the canoes, for the wedger to stand upon, and the log itself is turned over till it lies at a convenient angle, by means of a lever placed underneath it, the



end of the lever raised by a rope made fast to a windlass. Sometimes a simple floor or keel-piece is used, on which the boat is subsequently built up. In this case stem and stern pieces will be worked in. The sides are rabetted into the floor piece, and the upper strakes built on as in an ordinary carvel-built boat. The simple dug-out form having been obtained, the upper strakes can be built on, the ribs being carried up to receive them. For this purpose the planks are bent by various ingenious applications of levers and hot embers. Many clever devices are used by the Malays for getting the necessary power, and the boat-builder has many arrangements of stout upright pegs about his shop or in his compound.

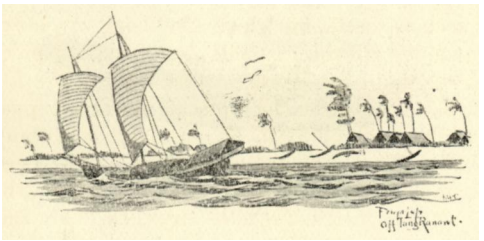
In the inland sea of Singora, many dug-outs



may be seen, built up with strake on strake, in the most unblushing way, without any attempt to hide the roughest method of boat building, perhaps to be seen anywhere. No attempt is made to work in stern and stern posts. The ends are blocked across a foot or two inside

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the end of the boat's nose or tail, if one may use the expression, thus forming thwart-ship water-tight bulkheads. The two or three strakes, often various coloured, are built on, and the topmost one is utilised to give a finish to the whole, by being extended and turned up forward, and carried out to form a steersman's staging some way aft. The almost submerged noses of these boats, which are really more Siamese than Malay in type, have generally a most pathetic expression. These boats draw very little water, and are used all over the lake, being able to navigate the shallows which now form so large a portion of it. They are usually rigged not with the Malay lug, but the Siamese high-pointed standing lug, a far handier and handsomer sail. For these, the very light yellow matting is used, which is almost universal in the upper portion of the Gulf of Siam.



In another method of warping planks by aid of a fire, when the planks are ready to go on as upper strakes, they are fixed in position, and built up upon the dug-out keel and floor portion of the boat, which has already been opened out to the required extent, as described. The strakes, as they are put on, are held in position by a system of bamboo ties, and secured by rattan lashings. The last stages of the Malay boat differ with the district. In many cases a beautiful finish is given to the fittings, and a shining polish to the under-water portion of the hull. At this stage half the village may be found at the boat-builders, polishing or criticising with much energy and enthusiasm.

APPENDIX.

I.—List of Boats.

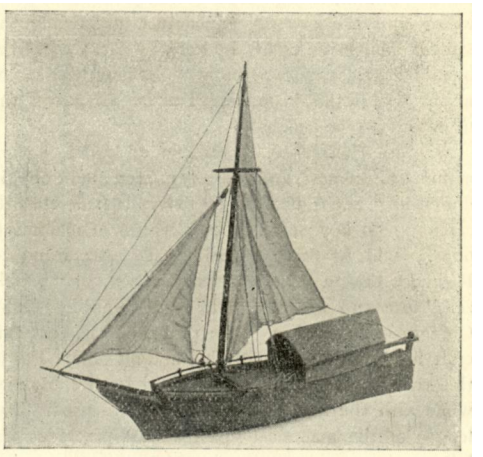
1. Balok*.—A single-masted lugsail boat. The model suffers from a mast which is too short to hoist the lugsail. The boat has good beam, and fairly flat floors. There are washboards at the quarters, and a peculiar slightly outrigged grating or staying over the stern post. The rudder is very small and short, and has a yoke and lines.

2. Bedar or Bidar* :—From shape of stemhead or beak; built of chengal; length, 24 ft. beam; 4 ft. depth of hull; 2 ft. freeboard; 1 ft. capacity; 1 koy; number of crew, 3; oars only.

3. Bandong.—Built of merawan; dimensions, 54 ft. by 6 ft. by 3 ft.; 13 ft. freeboard; capacity, 2 koy; crew of 5; length of mast, 50 ft.; cloth lug sail.

4. Banting† (Achin, Sumatra).—A two-masted trader, built of giam wood; dimensions, 90 ft. by 27 ft. by 7 ft.; 2 ft. freeboard; capacity, 12 koy; crew of 6; length of mainmast, 50 ft.; sails of cloth, but rig uncertain.

5. Bermat (Gelmat). — A type of boat frequently seen in tidal waters on the west coast. Has one mast; carrying a square-headed dipping lugsail of the usual type; also a small, roughly-made gallery aft,



Gubang Bugis.‡

which amounts to little more than an out-rigged seat, and is fitted with a steering paddle in place of a rudder. Length of this model is 19 in.

6. Gubang§ (Bugis or Celebes). — The hull of this model shows a lot of dead-wood aft, and a lack of body abaft the midship section. A clipper cut-water, a long, straight bottom, narrow quarters, leading to a perpendicular stern-post, do not combine to make a handsome vessel, or to satisfy one as to the accuracy of the model. The rig is a European adaptation, scarcely satisfactory except when beam-winds are available.

7. Chemplong (Sumatra).—A long paddling canoe, built of jati. Dimensions, 60 ft. by 5 ft. by 2 ft. 3 in., 1 ft. freeboard; capacity, 1 koy; crew of 12; oars only.

8. Gubang ("pirate" boat).—The gong is usually

* Klinkert says, a trading vessel of great tonnage formerly used.

* Klinkert says, a small, single-masted sailing boat, also used as state boat by Princes.

† Klinkert says, a two-masted Achinese vessel.

‡ This and the other illustrations in the Appendix are from the models in the Cambridge Archæological Museum.

§ Klinkert says:—"A small sea vessel, exceedingly sea-worthy. In reality it is no doubt much more so than in the model."

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hung just forward of the deck-house. This model is chiefly interesting as showing what in old days was a very formidable type of sea rover, or pirate, propelled chiefly by oars and armed with swivel guns of considerable size in the bows. A stout timber breastwork forward gave shelter to the crew when as usual the attack was made end on.

9. Gurap.—One of the largest Malay traders, fore and aft rigged on two masts; material, giam; dimensions, 300 ft. by 30 ft. by 20 ft., 11 ft. freeboard; capacity, 100 koy; crew of 30; length of mainmast, 100 ft.

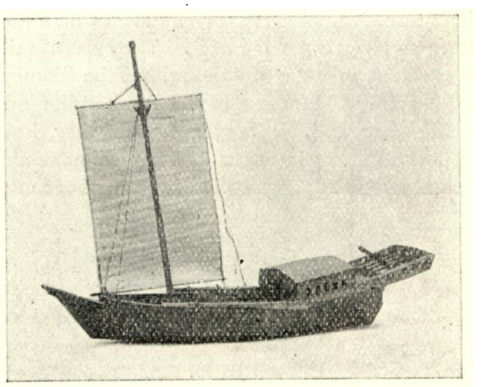
10. Jalak.—The Pahang name for the ordinary east coast two-masted Penjajap-rigged trader, known as Payang at Trengganu. The main proportions are the same, as is the rig, but there are local differences in build of hull, though the material is the same giam wood, and the general appearance practically the same. Dimensions, 72 ft. by 12 ft. by 9 ft.; 4 ft. freeboard; capacity, 2 koy; crew of 8; length of mainmast, 36 ft. in this instance. The lugsails are of the usual screw-pine leaf.

11. Jong (junk).—A large type of trader, having mainmast, foremast, and possibly mizzen; built of jati; dimensions, 200 ft. by 29 ft. by 18 ft.; 10 ft. freeboard; capacity, 50 koy; crew of 24; length of mainmast, 90 ft.; said to carry "gusi" sail. According to Klinkert, this may be "bezaan" mizen, or "gaffel-zeil," fore and aft gaff sail, as distinguished from Chinese or Malay lug. The probability is, that this craft is always rigged with fore and aft sails. For in this case topmasts are always used by the Malays, while with the lug sails, pole masts are used. The length of the mainmast given almost precludes the latter.

12. Jong Batubara.—Built of chengal; dimensions, 90 ft. by 24 ft. by 16 ft.; 7 ft. freeboard; capacity, 15 koy; crew of 9; length mainmast, 90 ft.

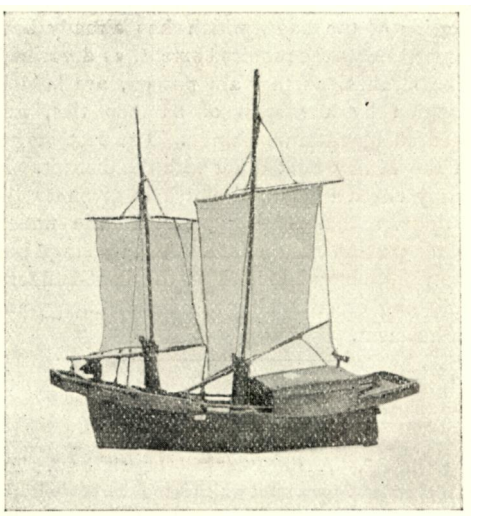
13. Kakap Jeram* (native Selangor coast fishing boat).—A typical Malay fishing boat of the Selangor coast. The rig is practically the same as that of the Nadir. The model shows the figurehead, and ornamented stern post, and the long paddle rudder already described. The gratings on which the crew are accommodated are shewn, and along each side forming the gunwale may be seen a wash-strake formed of strong lacing of split bamboo strips, stoutly sewn together with bamboo withies, and filled in with palm leaf, the whole held in position by lashings to knees brought up from the boat's ribs. This is a very usual form of wash-strake in Malay boats, and is strong, and light, and effective. It is given considerable flare at each quarter. The equivalent of the lumber irons used in European fishing craft is provided by loops of rattan on the starboard side, and here the punt poles, and other spars are stowed. Forward will be noticed a peculiar form of bits, stretching athwart ships, used for winding the cable upon, as well as bitting it. Dimensions, 13 ft. by 7 ft., by 3 ft.; 1 ft. freeboard; capacity, 2 koy; crew of 3; length of mast, 23 feet; material, meranti.

14. Katar.—Built of jati; dimensions, 180 ft. by 21 ft., by 9 ft.; 4 ft. freeboard; capacity, 20 koy; crew of 10. Length of mainmast, 90 ft. Said to be one-master. Though the name resembles our word cutter, one cannot suppose a Malay vessel of such dimensions is cutter-rigged. The Malays are not accustomed to use material of sufficient strength to stand the enormous strains that would be involved.



KETIAP.

15. Ketiap (trading river boat, built of giam).—Dimensions, 48 ft. by 9 ft. by 3 ft.; 1 ft. freeboard; capacity, 2 koy; crew of 3; oars and poles only.

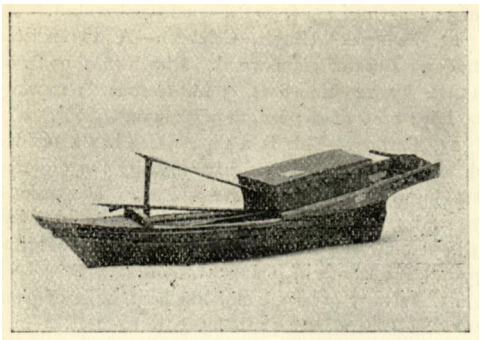


KETIAP AYAM.

16. Ketiap Buaya (Katar).—A cutter-rigged river boat, carrying a figurehead representing a crocodile, and an outrigged gallery. It was propelled by sweeps. The length of this model is 21½ in.

* Kakap means "spy" or "scout," or "look-out," and Jeram is the name of a big fishing-village in the Kuala Selangor district (of Selangor), from which this boat took its name of the Jeram Scouter.

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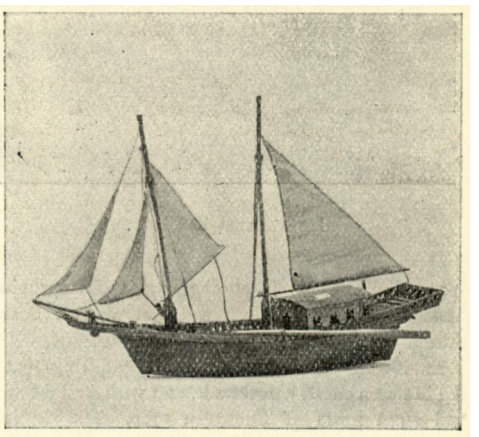


KETIAP PENGALLAK.

17. Kichi (large two-master). — Material, jati; dimensions, 200 ft. by 30 ft. by 15 ft.; 5 ft. freeboard; capacity, 60 koy; crew of 20; length of mainmast, 80 feet; said to be rigged with yards, brig-rig. Klinkert says: English brig or yacht. Some of the Malay Peninsula Rajahs have at various times owned very fine European built and rigged vessels half as traders half as yachts. A very handsome brig belonged to an East Coast Rajah a few years ago.

18. Kolek* (lit. the "Rocker" or wobbler, from its crank build).—The term "sampan," a word of apparently Chinese origin, which is given generally to any small, especially Chinese, boats, is also frequently applied to these canoes. The kolek is the usual form of small sea-fishing canoe, the stem and stern-post are generally high and pointed, with some decorative paint work, or other ornamentation. It is generally carvel-built, with a shapely hull, and prettily rounded forefoot; but there is very little bilge, and consequently small stability, which, combined with the low canoe-like freeboard, makes these boats somewhat tricky to the novice. The peculiar "crabs'-eyes" are frequently to be seen in these boats. They carry single or double lug sails according to length. In the former case, the tack of the sail is usually belayed at the mast, so as to form a standing sail. In these little boats the young Malays generally got their first lessons in sailing. In the longer boats, with larger crews, two dipping lugs of the usual Malay type are generally preferred. Dimensions of 5-man boat:—Length, 24 ft.; beam, 4 ft.; depth, 2 ft.; freeboard, 1 ft.; capacity, 20 pik; length of mast, 24 ft. Some of these boats are said by the Malays to carry the "sabang" sail. Klinkert describes this as "the sail of a small boat which has no tackle except a brace, but has instead a kind of 'sokong' [= prop]." This presumably means a sprit-sail, set up by its sprit—no other sail so exactly answering to this description. In Singapore, the koleks have developed into long boats used a good deal in racing, rigged with large cloth-made spreet mainsail and stay-foresail, and manned by a large crew of 20 or more, who act as live ballast out to windward. In a fresh breeze they stand on the gunwale, and, holding on to man ropes leading from the mast, lean out all their length to windward. These boats are very slippy with the wind abaft the beam, for, with a length of 45 feet, they have a beam of not more than 5 ft. 6 in., and a draught of about 2 ft. But they have no grip for weatherly work. The increase of the lateral resistance, by the introduction of a centre-board, would probably result in enabling these boats to perform well on a wind in smooth water.

19. Lancha* or Lanchang† (Malay two-master, with dipping lug-sails).—This is an approach to a sea-keeping type of vessel. She is rigged with the ordinary square-headed dipping lug sails, which are of nearly equal size as in the Penjajap. The lofty slender masts are well stayed, and are stepped in tabernacles of a kind which is common to the Malays, and both are raked forward. The sails are made of the screw-palm with cloth tops, and there are main and peak halyards. The vessel has a clipper stem, over which the fore-gallery is built for the anchors; this also acts as a bumpkin or bowspit for spreading the tack of the foresail. A comparatively commodious deck-cabin and stern gallery are added over the straight stern post. The hull is carvel built on very European lines, but has no great depth. The model is armed with pivot m. l. guns, and has sweeps along her sides as is usual.



LANCHA.

N.B.—In Selangor it is affirmed that the Lanchang is a type of boat which was frequently owned by Malay Rajas on the Sumatran coast, and to this day in Selangor, it is this royal vessel which is dedicated

* Klinkert says:—"The small variety for one person only; but big ones hold 10 or more persons."

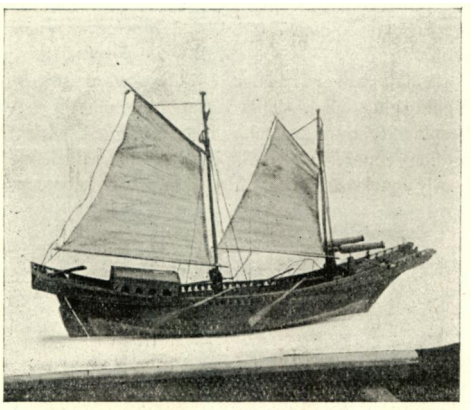
* Klinkert says:—"Big Indian three-master, with slanting or sloping sails from port; Lancha, boat or sloop." (See Lanchang.)

† A galley or oared vessel with yards, but without "spiegel."—Klinkert.

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to the service of the spirits, when the medicine man invites them to sail away.

20. Lanchang To'Aru* (Bandar). — Malay two-master, fore and aft rigged. This is very similar to the other Lanchang in hull, but the model has short masts, and two badly cut and fitted fore and aft gaff and boom sails. She would need very much a larger spread of head canvas, and boats thus rigged on the east coast generally carry long topmasts and jibbooms for light-weather sails.



LANCHANG TO'ARU.

21. Nadir.—This is another more Europeanised Malacca type, with cloth sail and weather boards astern.

22. Nadir.—A shallow-draft Malay fishing-boat of the Malacca coast, carvel built, and with straight stem and stern posts of European type. The rig is a single lug, the tack or fore-end of the boom being made fast well forward, and to windward of the mast. The luff is set taut by a spar-bowline fitting in a cringle, the after-end coming to the deck abaft the mast. There is a peak as well as a main halyard, both in single parts. the sheet and vang being the same, and leading to the helmsman aft. There are spear-bladed paddles, and in the model the "Kadjang," or attap-thatch shelter, used by the crew when riding to an anchor, is shown rolled up on the gratings. The sail is reefed by rolling round the main boom by help of a wooden pin used as a lever, from the fore-end to the height required. A rope parral, as is usual, keeps the sail to the mast. Such a boat would be enormously improved by centre or lee-boards. Material, kelidang; dimensions, 24 ft. by 6 ft. by 3 ft. 3 in.; 1 ft. freeboard; capacity, 1 koy; crew of 5; length of mast, 30 ft., screwpine-leaf sail.

23. Pedewak* (Bugis, Celebes).—A two-masted trader. Built of giam wood. Dimensions, 99 ft. by 15 ft. by 12 ft.; 6 ft. 3 in. freeboard; capacity 60 koy; crew of 16; length of mainmast, 60 ft.

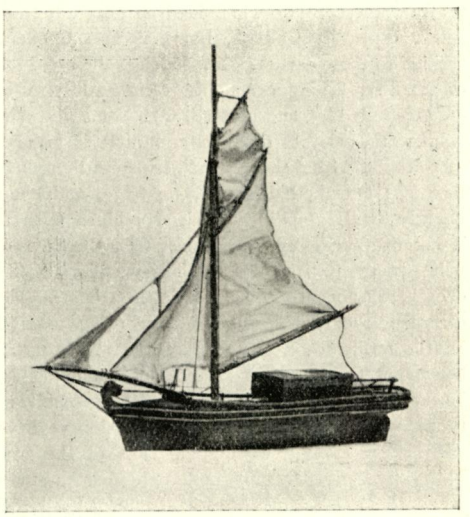
24. Payang.—This is a type which has a divided deck-house. The Payang has usually the ordinary two-lug rig, and dandans fore and aft. Dimensions, 72 ft. by 12 ft. by 5 ft.; 3 ft. freeboard; capacity, 4 koy; crew of 4 men; material, giam; sails of screw palm-leaf; length of mainmast, 60 ft.

25. Pelang† (a large canoe-like boat, built of giam wood).—Dimensions, 42 ft. by 5 ft. by 2 ft. 3 in.; 1 ft. freeboard; capacity, 1 koy; one mast about 40 ft. long with cloth lug sail.

26. Penchalang (Bugis Celebes)—A two-masted trader, built of jati. Dimensions, 80 ft. by 15 ft. by 9 ft.; 4 ft. freeboard; capacity, 15 koy; crew of 30 (?). Apparently European rigged, the masts having ratlines.

27. Pemudik.—A river boat, built of seraya. Dimensions, 48 ft. by 15 ft. by 2 ft.; 6 in. freeboard; capacity, 2 k. 20 p.; crew of 5. Carries no awning.

28. Pinis.—Built of penak wood. Dimensions, 120 ft. by 27 ft. by 8 ft.; 3 ft. freeboard; capacity, 30 koy; crew of 9. The masts: mainmast 50 ft. long.



PINIS.

29. Prahu (Ayam Cock boat).—So-called from its figurehead. In other respects it differs little from other forms of Malay river boats.

30. Prahu Buaya (Crocodile boat).—So-named simply from its figurehead. She has a stern gallery, a kadjung for the passengers, and four oars, with mast

* To'Aru was one of the council of four great chiefs of Selangor, who in former days had much power, and to whom was entrusted the election of the Sultan. To'Aru was the most powerful of these four great chiefs, and took his name from a district called Aru, in Sumatra, from which he came over to settle in Selangor. Aru is probably the same as the word Aru (also eru or 'ru), which means a casuarina-tree. Bandar was the name of the place (on the Langat river) where To'Aru lived.

* Klinkert says: "Pedewakan—A Bugis trading vessel."
† Klinkert says: A flat-bottomed vessel. Chinese Pilan.

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and sail. The rudder is hung upon the stern post. Length of model, 23 in.

31. Prahu Enggang (Hornbill boat).—Named after its figurehead. The boat has a stern gallery, and the peculiar, but not uncommon, divided deck shelter aft. As regards her rig we may charitably suppose that the skipper, having been dismasted in a squall, has borrowed or stolen his mast and sail from a passing kolek.

32. Prahu Kumbang or "Borer-bee boat" (Royal barge from Selangor).—The gong is usually suspended from the ridge pole aft.

33. Prahu Naga or "dragon" boat.—A two-master with the ordinary square-headed dipping lugsails, and deck-house rudder, and galleries both fore and aft. The name of this boat, which means dragon, is taken from its figurehead which represents a dragon. It is said to be of a type formerly used by Malay Rajas, *e.g.*, by the Sultans of Perak and Selangor. The length of this model is 27 in.

34. Prahu Penggalah (a river boat of Kelantan type propelled by from four to six quanters).—The quanting poles when out of use are slung under the eaves of the deck-house, which is very low and entirely unprovided with windows. The quanters stand in pairs on the outrigged staging over the bows, and when the first pair have planted their poles they walk rapidly down towards the door of the deck-house pushing hard as they go. Immediately behind them come the second pair, and behind them come the third, each pair as it comes to the end of its walk lifting the poles over the heads of the succeeding pairs, and returning to the fore-end of the staging referred to. Length of this model about 19 in.

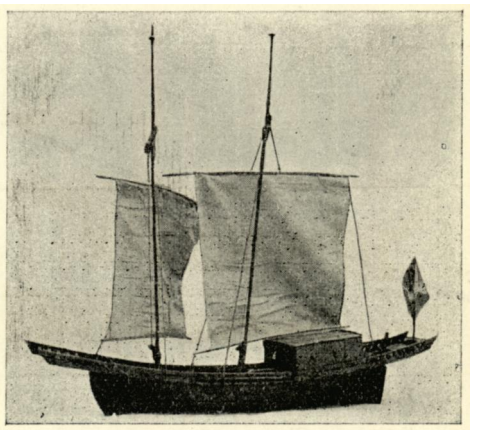
35. Prahu Pêlet (Eng. Pilot).—A thorough-going Malay as regards hull, with a low-cut imitation of an European gig's dipping lug, with the addition of the usual Malay boom and the vang to the yard. These vangs are always necessary owing to the sails not being of sufficiently stout material to carry a stout luff-rope, by which the sail can be set up taut to stand on a wind.

36. Prahu Jolong-jolong (lit. Long-beaked boat, from her cut-away fore-foot, and clipper stem).—She has the galleries shared by most of the large decked Malay boats. The rigging of the model is, as will be seen, somewhat faulty, but is sufficient to show that the ordinary two lug of the Penjajap and her sisters is used.

37. Prahu Tambang (*i.e.* passenger or ferry boat).—Has the bows prolonged into a sharp beak, mast and shoulder-of-mutton sail, outrigged seat for the steersman, and washboards astern. The steersman's seat is called "ketam kemudi" (lit. rudder-crab, from a supposed resemblance between its shape and that of a crab). The rudder is hung European fashion. The length of this model is 20 in.

38. Salah-Salah.—A large three-master, being fore and aft rigged on two masts, with yard or "peruan" (square or lugsail) on the third. Built of kelidang. Dimensions*—240 ft. by 30 ft. by 15 ft.; 5 ft. freeboard; capacity, 30 koy; crew of 20; length of mainmast, 80 ft.

39. Skonar (Qu. schooner).—Built of jati; dimensions 180 ft. by 26 ft. by 12 ft.; 4 ft. freeboard; capacity 40 koy; crew of 10. Described as being rigged on fore and main masts with yards, and third mast with "gusi" sail (mizzen or fore and aft sail). It would appear that the two forward masts either carry lugsails or square yards. The mizzen would be a fore and aft sail. This might be a barque-rigged or Chinese-rigged vessel.



S'KUCHI.

40. S'kuchi or skochi†.—A two-masted trader. Dimensions 50 ft. by 15 ft. by 7 ft.; 3 ft. freeboard; capacity 10 koy; crew of 8; length of mainmast 40 ft.; lugsails of screw palm leaf, of usual type.

41. Tongkang Malayu (Malay lighter).—This ketch-rig is now much used in the cargo lighters of Singapore, and is a handy one for a small crew, working about a crowded anchorage liable to sharp squalls. Mainsail and mizzen are set by an outhaul along the gaff, and are easily and rapidly taken in by being brailed to the mast. Many of these boats may be seen any day working in Singapore roads. There is also a class of lighter in Singapore rigged with a big flat-headed lugsail, somewhat like similar lighters at Rangoon. They are big powerful boats, well suited to their work. The rig is handy for going alongside ships, as involving very little gear.

42. Top or Tôb.—A two-master, built of giam wood. Dimensions, 90 ft. by 18 ft. by 8 ft.; 4 ft. freeboard; capacity, 15 koy; crew of 8; length of mainmast, 60 ft. Probably a fore and aft schooner rigged-vessel, being described as having the "gusi" sail. But if the word means "mizzen," the rig is left open.

* Probably over-all length to end of dandans or galleries.

† Klinkert says: from Dutch schuitze, used for any small sailing boats of European rig?

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43. Tunku Kudin's Barge (Kedah pattern), called "Kempeng" or "Ketiap Kedah."

44. Wilmana (from the name of a fabulous bird), an obsolete type of State-boat, formerly used by Selangor Rajas. The particular boat from which this model was copied belonged to one Ungku Alang. A river boat propelled by sweeps, and fitted with an awning for the crew, as well as for the passengers. It has outrigged galleries fore and aft, and carries a flag and royal gong. The length of this model is 32 ins.

II.—Tables of Boats (*a*).

No.	Name of boat.	Material.	Length.	Beam.	Depth (of hull).		Tonnage.		Freeboard.		Crew.	Masts.		Material of sails.	Remarks.
		Name of wood.	Feet.	Feet.	Feet.	Inches.	Koyan.	Pikul.	Feet.	Inches.	No.	No.	Height in feet.		
1.	Bedar.	Chengal.	24	4	2	0	1	0	1	0	3	...	...	...	Oars only.
2.	Ketiap.	Giam.	48	9	3	0	2	0	1	0	5	...	...	...	Oars and poles only; used for trading up the rivers.
3.	Pemudik.	Seraya.	48	15	2	0	2	20	0	6	5	...	...	...	Carries no awning; open river boat.
4.	Nadir.	Kelidang.	24	6	3	3	1	0	1	0	5	1	30	screw-pine (mengkuang)	Leaf.
5.	Payang.	Giam.	72	12	5	0	4	0	3	0	40	2	60	do.	
6.	Kakap.	Meranti.	18	7	3	0	2	0	1	0	3	1	23	cloth	
7.	G'lemat.	Merbau.	36	8	2	3	1	0	1	0	3	1	36	cloth	
8.	Skuchi.	Kelidang.	50	15	7	0	10	0	3	0	8	2	40	screw-pine leaf	
9.	Jong.	Jati.	200	29	18	0	50	0	10	0	24	2	90	cloth	"Gusi" sail.
10.	Jong (Batubara).	Chengal.	90	24	16	0	15	0	7	0	9	2	90	cloth	
11.	Salah-Salah.	Kelidang.	240	30	15	0	60	0	5	0	20	3	80	cloth	1. Mast, with yard (peruan); 2. Masts with gaff topsail (gap topsir).
12.	Gurap.	Giam.	300	30	20	0	100	0	11	0	30	2	100	cloth	Same as No. 11.
13.	Kichi.	Jati.	200	30	15	0	60	0	5	0	20	2	80	cloth	Two masts, with yards.
14.	S'konar.	Jati.	180	26	12	0	40	0	4	0	10	2	70	cloth	Two masts (*fore and main*), with yards, third mast with "gusi" (gaff topsail).
15.	Penchalang (Bugis).	Jati.	80	15	9	0	15	0	4	0	30	2	60	cloth	Masts furnished with ladders (?tangga) (possibly European "shrouds").
16.	Chemplong.	Jati.	60	5	2	3	1	0	1	0	12	...	...	(none)	Oars only.
17.	Bandong.	Merawan.	54	6	3	0	2	0	1	3	5	1	50	cloth	
18.	Pedewak (Bugis).	Giam.	99	15	12	0	50	0	6	3	16	2	60	cloth	
19.	Pinis.	Penak.	120	27	8	0	30	0	3	0	9	2	50	cloth	
20.	Katar.	Jati.	180	21	9	0	20	0	4	0	10	1	90	cloth	
21.	Banting (Acheh).	Giam.	90	27	7	0	12	0	2	0	6	2	50	cloth	
22.	Pelang.	Giam.	42	5	2	3	1	0	1	0	5	1	40	cloth	
23.	Top.	Giam.	90	18	8	0	15	0	4	0	10	2	60	cloth	"Gusi."
24.	Jalak (Pahang)	Giam.	72	12	9	0	2	0	4	0	8	2	36	screw-pine leaf	"Awning fixed permanently astern askew (?)."
25.	Kolek.	Seraya.	24	4	2	0	0	20	1	0	5	1	24	cloth	"Sabang" (sprit) sail (?)

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TABLES OF BOATS (*b*).

Name of Boat. (Nama prahu.)	Length. (Panjang-nya.)	Beam. (Awak-nya.)	Draft. (Brapa kaki dalam makam-nya.)	Freeboard. (Brapa kaki tinggi-nya deri pada ayer.)	Cargo. (Muatan-nya.)	Number of Crew. (Orang-nya.)	Number of Masts. (Brapa tiang-nya.)	Remarks.
Sampan	4 depa	4 kaki	1½ kaki	1 kaki	6 pikul	2	...	...
(1) Galor	3 ,,	3 ,,	½ ,,	½ ,,	3 ,,	1	...	...
(2) Sagor	25 ft.	5 ft.	1 ft.	3 ft.	6 ,,	3	1	...
(3) Kolek	3 depa	6 kaki	1 kaki	1½ kaki	6 pikul	1	...	...
Badar	4 ,,	5 ,,	1½ ,,	2 ,,	6 ,,	4	...	...
Ketiap	30 ft.	6 7 ft.	1 ft.	2 ft.	1½ koyan	5	...	...
Pemudik	35 ft.	7 ft.	1 ft.	3 ft.	2 ,,	6	...	...
Nadir	20-25 ft.	6 ft.	1½ ft.	4 ft.	1 ,,	4	1	...
Payang	48 ft.	7 ft.	2 ft.	3 ft.	2½ ,,	12	2	...
Kakap	5 depa	1½ kaki	2 kaki	1½ kaki	5 ,,	5	...	...
Bermat	...	...	...	...	...	...	...	...
Skuchi	50-60 ft.	8 ft.	3 ft.	5 ft.	5-6 ,,	6	2	1 jib
Salah-Salah	72 ft.	10 ft.	5 ft.	7 ft.	10 ,,	8	2	2 jibs
Jong	12 depa	2½ depa	5 kaki	6 kaki	10 ,,	6	3	...
Tongkang-Malayu	35 ft.	6-7 ft.	2 ft.	5 ft.	2 ,,	5	2	...
Gubang	4 depa	4½ kaki	1 kaki	4 kaki	8 pikul	3	1	...
Penjajap (labak bergan-tong)	7 ,,	1½ depa	2 ,,	4 ,,	5 koyan	4	1	...
Balok	30 ft.	6 ft.	1 ft.	2 ft.	1½ ,,	5	...	...
Gebang	10 depa	2 depa	2½ kaki	5 kaki	7 ,,	5	2	...
Lancha	5 ,,	1 ,,	1½ ,,	4 ,,	5 ,,	4	1	...
Lanchara Lanchara	10 ,,	2 ,,	3 ,,	5 ,,	8 ,,	6	...	...
Prahu-Tambang, etc.	18 ft.	5 ft.	½ ft.	2 ft.	1 ,,	2	1	...
Kolek lumba (Singapore)	6 depa	1 depa	1½ kaki	4 kaki	4 ,,	3	1	...

III.—LIST OF PRINCIPAL WOODS USED IN MALAY BOAT-BUILDING.

Malay Name.	Botanical Name.	Names of Boats in which they are used.
1. Chengal or chengai	...	Bedar, Jong Batubara.
2. Giam	Shorea sp. (in Sumatra), Balanocarpus sp? (in Malay Peninsula)	Ketiap, Pelang, Payang, Top, Gurap, Jalak, Pedewak, Banting Acheh.
3. Jati	(Teak) tectona grandis	Jong, Kichi, Skonar, Katar, Chemplong, Penchalang Bugis.
4. Kelidang or K'ledang (sel.)	Artocarpus lancifolius	Nadir, Skuchi, Salah-salah.
5. Meranti	Hopea meranti	Kakap.
6. Merawan	Hopea mengarawan	Bandong.
7. Merbau	Afzelia palembanica	Gelemat (Bermat?).
8. Penak	Balanocarpus maximus	Pinis (?).
9. Saraya or Seraia Chempedak ayer	Shorea	Pemudik, Kolek.

P.S.—Among the many other woods used in Malay boat-building may be mentioned the several species of "Medang" (tetranthera), and mentangor (calophyllum), used especially for masts and spars, &c.; also perhaps the Indian daun (Shorea); K'ranji (leguminosæ and dipterocarpeæ); and Kosak or Kusak (dipterocarpeæ); Penaga (calophyllum inophyllum) is used especially for "boats'-knees" (siku-siku); Perepat (sonneratia alba ?); Pudeh (calophyllum inophyllum) for big boats, especially stem and bow pieces, not planks; Bentangor bunga for masts (calophyllum pulcherrimum); glam-bark (melaleuca leucodendron) and damar, instead of oakum and pitch.

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IV.—Glossary.

Andang-andang.—The "yard."

Anjing-anjing.—Lit. the "Dogs"; tack-ring for sail fixed in *chabang guling* (*q.v.*).

Angkul-angkul.—Metal ring for setting up stays to, or belaying tack of sail (both fore and aft). When these rings are of wood, they are called anjing-anjing *q.v.*; *e.p.* also the other use of the word angkul-angkul (in *kolek*).

Angkul-angkul.—The ornamental "bit" across the stem of the sea-canoe (*kolek*) only, with "crab's eyes" lashed in position; *v.* angkul-angkul (supra).

Apit lempang.—Lower strake.

Balas.—(*v.* Tolak bara).

Bantal.—Lit. pillow; *i.e.*, "rest" or "support."

Batang (*dayong*) or *gandar.*—The shaft of an oar.

Batu sauh.—Lit. "anchor-stone," *i.e.*, weight lashed to shank of Malay anchor as a "sinker."

'Bam (*kamudi*).—Rudderhead.

Bêdar.—An elongated and flattened beak, broadening towards the tip (not unlike the bill of an ornithorhyncus). *v.* also list of boat names.

Bekas pengumpil.—Crutch for helmsman's steering oar or paddle.

Bekas Tombak sayang.—Cringle in the luff taking spar-bow-line.

Bengku-bengku (*kajang*).—Crutches or solid forks for supporting awning (kajang), stepped in "joints" (internodes) of bamboo: native (Malay) awning rests for supporting *sides* of awning only.

Beranda.—Gallery or deckhouse, lit. "verandah" (perhaps from the Portuguese).

Berombong.—Mast-tabernacle.

Birei.—"Side" of a boat (*i.e.* a thin, sharp boat-side as distinct from a boat-side with broad gun-wale, for which latter *v.* leper-leper).

Bom (Dutch).—The "Boom."

Buah berembang.—The Truck (lit. "*berembang*" fruit, so-called from an onion-shapened fruit which grows on a big tree in the tidal mangrove swamps). In Jav. Berembang *v.* onion. The fruit is acid and may be eaten.

Buaya-buaya.—Lit. the Crocodile. The posts at bow and stern of some Malay boats, which are nailed to the linggi (*q.v.*).

Chabang guling.—Horizontal forked bow- and-stern gunwale—pieces.

Cherok jegong.—Locker under bow-sheets. (Klinkert says for stowing cable or sails, ropes, &c.).

Cherok jegong.—Bow and stern-lockers.

Chupu-chupu (*tiang*).—Mast-steps and partners.

Dandan.—Projecting or bow or stern galleries, as in many old and some modern sailing-vessels.

Dap'ras or *daperas.*—A rope "fender" for protecting the side of a ship.

Daun dayong.—Lit. "Oar-leaf;" *i.e.*, oar-blade.

Daun pengayuh.—Paddle-blade.

Dayong.—Oar.

Gading-gading.—The ribs (lit. ivories or elephant-tusks) of a built-up boat.

Gai p'lang jib.—Bowsprit-stays.

Gaing.—Klinkert says: "Beak-like piece formed by the tapering of both stem and stern of a ship above the keel."

Gandar sauh.—Shank of anchor.

Gelemat.—(Horizontal) forked strengthening-piece inside stem (of a river-boat or "Ketiap" only).

Gula (also *algula*).—Grommets or oarloops (made of rattan, for oars).

Jamban.—The "jakes." (Dinding jamban, the side of the "Jakes") *v. Jerambah.*

Jaring-jaring.—Lit. nettings or network, *i.e.*, the gratings of the flooring of a sampan, &c.)

Jempu-jempu.—Ensign-staff step.

Jongor.—Jib-boom (spar on end of bow-sprit).

Jerambah.—The open-work floor of a dandan or out-rigged stern gallery, consisting of narrow fore-and-aft battens, with open spaces between them, and used as a "Jakes," &c. (Klinkert says, place where plates are washed and people bathe, the (cook's) gallery on board, &c.).

Jerambah.—Out-rigged bow gallery.

Jerubong.—Klinkert says: "Projecting roof above the deck, made by covering in with matting the cargo which cannot otherwise be stowed."

Kajang serong.—Lit. cross-kajang or awning.

Kamar (or *bilek*).—A cabin (fr. Port. Kamar).

Kamudi.—Rudder. 1. *k. sepak* or the kicking rudder (the native steering-paddle). 2. *k. chawat*, the "close-shipped" or European rudder (lit. "loin-cloth" rudder, because it is fitted to the stern-post).

Kandar (*dayong*).—*v. gandar* (or *batang*).

Kapi.—A double sheave-block.

K'ladau sauh (or *keladau*).—Cable-bits, extending across bows, on which cable is wound.

Kelikir.—Robbins for bending sail to yard.

Kelikir (*dayong*).—Big rattan loop lashed to sangga (*q.v.*), for carrying oars, like European fisherman's lumber iron.

Ketam Kamudi.—Lit. Rudder crab. An ornamental plank taking rudder upright in the sea-canoe (*kolek*) only.

Kota mara.—Tranverse deck bulkheads at stem and stern.

Kuku.—Lit. "Claw" or "talon"—anchor fluke.

Kurong.—Deck-house. K. bajau, the deck house of a pirate (gubang laut), which consisted of two separate fore and aft shelters facing each other at the stern.

Lantei.—Flooring (of a sampan, &c.); frequently a wooden grating or grid.

Layar, or *layer.*—A sail. (*a*) native, of the leaf of the screw-palm, or the "kadut," &c.; called *l. batang* (*b*) foreign: *e.g.*, the cloth sail.

——— *Puchok jala.*—Lit. "peak of casing-net" sail; *i.e.*, what we should call "shoulder-of-mutton" sail.

——— *Bara gawir suai* (? extra sail "between the masts").

——— *Bara gawir suai.*—Staysail.

——— *Bara gusi.*—Main-sail.

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Layar, Gap topsier.—Gaff-topsail, or topsail.

——— *Trengkit.*—Foresail.

——— *Trengkit gedeling.*—Fore topsail.

——— *Trengkit topsier.*—Fore-topsail (over gaff ?)

Leper leper.—Flat top of gunwale.

Liang kumbang.—Lit. "Borer-bee holes," limber holes, *i.e.*, spaces left underneath the ribs for the water to pass by (to reach the bailing-well).

Linggi.—Stem- and stern-pieces of some Malay fishing-boats.

Linggi or *kepala 'luan.*—Stempiece (*kepala 'luan*—bow-head). [Linggi also means stern-piece, but for this the corresponding synonym is *kepala buritan*, or stern-head.]

Linggisan (*dayong*) or *linggis.*—False gunwale-piece, taking the grommets.

Lunas.—Keel or keelson (European).

Magun.—By some said (rather vaguely) to be a "small hut above the kajang"; by others, "a small shelter formed by an additional kajang in the stern (at the back of the main awning).

Mata kakap.—Lit. "scout-hole," or more lit. "scout's eye"; *i.e.*, the plughole.

Mata ketam—Lit. "crab's eyes"; *v.* angkul-angkul. (These mata ketam are short sticks with knobs on them, thus resembling crab's eyes on stalks; they are fitted into the angkul-angkul).

Naga-naga.—Central fore-and-aft-piece let into deck between thwarts, over bailing-well; *v.* also naga-naga, *infra.*

Naga-naga.—Lit. the "Dragon"; bottom floor-board or stringer; horizontal fore-and-aft timber nailed to the keel, along the inside of the boat; *v.* also naga-naga, *supra.*

Pakau.—(1) Strengthening piece, as in case of pakau rubing; (2) cross-piece, like the bar of a bucket or bailer, which is used as a handle for making rope fast to, &c.

Pakau kajang.—Split cane. Strengthening piece for edge of awning or kajang.

Paku chabang 'luan.—Metal fastenings holding strakes to bow rib. (Paku=nail). Lit. "nails of bow-fork."

Paku gading-gading.—Metal fastenings holding strakes to rib abreast mast. (Lit. "rib-nails.")

Pangger.—The cross timbers taking the flooring of a sampan, &c.

Pantok.—Short weather-boards on the quarters in a river boat or ketiap.

Papan guntong or *guntong* (only)—Top-strake.

Papan kamudi.—Steersman's out-rigged seat.

Papan lupi (or *lopi*).—Stern-sheet floor-piece for steersman (in the "kolek" or sea-canoe).

Papan tembatu.—Fore-and-aft battens of out-rigged gallery.

Papan ketiak.—Lit. "arm-pit planks," *i.e.*, horizontal out-rigged wash-boards on each bow.

Papan lapek sauh.—Bow-sheets (on which anchor is stowed).

Pasak tuli.—Lit. "deaf"-pegs, *i.e.*, wooden pegs making fast ends of strakes to stem.

Pelkah.—The hatch.

Pemetar or *pemutar* (also *tangan*) *kamudi.*—The tiller [lit. the turning-piece or rudder-arm (tangan)].

Penchachi.—A pin or lever (short spar), used only to help in rolling up the leaf sail, which is much harder to roll than a sail of cloth upon the boom, whether for reefing or furling.

Pendua apit lempang.—Middle (lit. 2nd) strake.

Pengayuk.—Paddle.

Pengapit Rubing.—Lowest slat (or split cane), made fast to gunwale and ribs, to hold in place the bottom of the "rubing" (*q.v.*).

Perambut takal changking.—Stropping of peak-halyard block.

Perapatan.—The jointure or joining-places of the strakes. Probably also originally a wooden caulking-piece, such as is well-known elsewhere. Klinkert does not mention this, but gives *perapat*—a peg upon which, or hole in which, the oar-handles are stuck (?).

Peruan.—Yards, *i.e.*, andang-andang (*q.v.*)

Perimpin.—The luff-rope (rope edging of foreport or "luff" of the sail).

Petak.—The hold.

Petak ikan.—The fish-hold.

Pisang-pisang.—Lit. the plaintain or banana, *i.e.*, the galver-strake or rubbing-strake.

'Pit.—Described as a spar or timber above the main-sail, apparently another name for the gaff or yard (possibly a confusion with English peak).

Rubing.—False gunwale, or wash-strake, made of palm-leaf and fixed on to the gunwale of Malay fishing-boats, &c.

Sampan slit.—A dug-out with in-board wash-strake.

Sangga (*galah*).—Solid forked lumber-piece for carrying quanting-poles, &c.

Sauh.—Anchor.

Sengkar.—A thwart.

Sengkar B'lakang.—Stern-sheet thwart.

Sengkar Timba ruang.—Bailing-well thwarts.

Sengkar tiang (or *tiyang*).—The mast thwart.

Senta.—According to Klinkert, the fore and aft timbers on which the deck timbers ("deck baulks") come to be laid.

Senta (or *rembat*).—Klinkert says rimbat, the false gunwale-piece taking the grommet (linggisan *q.v.*, but *v. senta supra*).

Serempu.—Dug out keelpiece, previous to building upon, or, more strictly, "keel and bottom-piece."

Siar (or *sier*).—Sail (Eng. ?).

Siku-siku.—The "knees," according to Klinkert. Lit. it means the "elbows."

S'kat Kamudi.—Aft, thwart.

S'kat 'luan.—The bow thwart.

Subang babi.—Lit. pig's ear-rings (from its shape); *i.e.*, false stem-taking ends of false gunwale (rubing).

Sulor-bayong.—Ornamental wooden scroll finial in stern sheets of sea-canoe (kolek).

Tajok.—Native forked rests (or crutches) for supporting the ends of the Malay awning or kajang.

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Tajok lelei (*v. supra*).—Elongated rib with knee at stern, taking the end of the "rubing" or surf-board.

Takal.—A single sheave block.

Tali anak.—The lashing which holds cable to shank.

—— *Anjar.*—Peak halyard (standing part).

—— *anggo'.*—Lit., nodding or pitching rope—the name given to the bobstay of the jongor (jib-boom, *q.v.*).

—— *bara gai.*—"Rope used with boom of stern-mast." Main tack.

—— *bubutan.*—Runners or running back-stays.

—— *bustai* —(Eng.) "Bob-stay."

—— *changking.*—Peak halyard (hauling part).

—— *dugang.*—Man-rope, enabling crew to lean out-board to windward when carrying press of sail.

—— *k'lat.*—Sheet.

—— *Klendara.*—Yard parral, holding yard to mast.

—— *Labrang.*—Synonym for timberang; shroud, or main halyard.

—— *lalei.*—"Vang," controlling the end of the yard.

—— *prahu.*—Lit. boat rope (the "painter").

—— *Sauh.*—The cable (lit. anchor rope).

—— *Temberang* (or Témbérang).—Shrouds; main-rigging.

—— *Trengkit gai.*—Rope used with boom of fore-mast (fore tack).

Teletei.—The slats of the rubing (wash or surf-board).

Tembatu.—Fore and aft battens of out-rigged bow gallery.

Tembuku.—Flat wooden block in which the thole is stepped.

Tiang (or *tiyang*) *agong.*—The main-mast.

Tiang (or *tiyang*) *gapil.*—The mizzen.

Tiang kamudi (or *tiyang k.*).—The rudder-upright, holding by a grommet the rudder head. This is in craft where the rudder is used on the quarter, generally on the lee side.

Tiang (or *tiyang*) *tupang.*—The foremast. Klinkert says this mast (the foremast) is called *T. tupang* from the fact that it stands so close to the crutch (*tupang*) on which the awning (*kajang*) rests.

Timba.—Bailing bucket or "bailer."

Timba ruang (or *ruwang*).—The bailing-well.

Tenda.—Short weather-boards on the quarters in a Nadir.

Tolak bara.—Ballast (also talas).

Tombak sayang.—Lit. "Hugging lance" (or "shaft"). Sparbowline fitting into a cringle in the luff.

Topang kajang.—Awning crutch (when made in two pieces, taking the ends of the awning or uajang).

Tul.—(Eng.) thowl or thole (Dutch), "dol."

Tupei-tupei.—A "cleat" [piece of wood fastened to a mast, thwart, or gunwale, for belaying ropes: distinct from belaying-pins, which go through a thwart or gunwale].

Ular-ular.—Lit., the "snake" or "serpent." (1) a "State" or "Royal" pendant or streamer. (2) See the scroll-work at the side of (out-rigged) galleries.

Ulu pengayuh.—Paddle-handle.

Ulu (*dayong*) —The "loom" of an oar (lit., oar-head, or hilt).

DISCUSSION.

The CHAIRMAN said it was a matter of regret that Mr. Warington Smyth was not in the country to read the paper himself.

Professor A. C. HADDON F.R.S., said he had no special knowledge of the boats of the East, but everyone who had been to Hong-Kong or Singapore must have been much struck with the great variety of craft. Again, on going down the Malay Archipelago, one met with a very great variety of Malay boats. The Society was very fortunate in having a paper read before it by two such good observers as Mr. Warington Smyth and Mr. Skeat. In the museum at Cambridge there were the original models from which some of the illustrations accompanying the paper were obtained; and when the present paper was printed it would add very greatly to the value of their collection in Cambridge. Also, conversely, those who wished to study Malay boatbuilding would have to go to Cambridge in order to see the specimens. He was sorry he could add nothing of interest, but expressed the very great pleasure he felt, as an ethnologist, that the Society had published the paper, and that the work had fallen into such capable hands as those of the author.

Sir WILLIAM LEE-WARNER, K.C.S.I., said he regretted he was unable to throw any special light upon the subject. It appeared to him that the more civilised nations were apt to imagine that the half civilised people of the East were unequal to modern requirements. We were apt to regard their agriculture as very primitive and unsuitable, and, consequently, we were always sending reformers out to show the people there, for instance, that they had better plough the soil deeper. But in all those things it was generally found that there was method in their madness. It was evident that the Malays possessed strongly the instinct of self-preservation. In their "dug-outs" and boats of easy draught the Malays showed that they knew the way to escape from a man-o'-war or its boat. He could not help reflecting upon a period of history with which he was rather familiar, namely, the second Burmese war, in which we took Pegu, in Lord Dalhousie's time, and then the great difficulty that occurred was due to the banditti. Those banditti all had boats, and escaped by getting these boats very quickly ove

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shallows, and then running out and hiding themselves in the mango swamp, whilst the boats that were sent to catch them, never got near them. It was not until some months afterwards, when Lord Dalhousie found that land police were of no use against this banditti, that he adopted their methods, and, as it were, set a thief to catch a thief, instituting boat police. There was, undoubtedly, in all races in the world a strong instinct of self-preservation, and whenever such people started warfare against civilised nations, they were like our friends, the Boers, who, with their easy mobility, were better equipped for the task than those who came against them.

The CHAIRMAN said the paper was well worthy of consideration, because it was written by a gentleman who was a boat sailer, had studied boat sailing, and knew well the subject upon which he was writing. An English officer in Hong Kong, who had a racing boat, used to go racing there with Mr. Warington Smyth, and he knew from that officer's experience that Mr. Warington Smyth was a very competent hand. Whenever a man spoke or wrote upon a subject with which he was thoroughly familiar his remarks were always worth hearing, even though they might not be on the particular lines studied by some of his audience. He (the Chairman) knew something about Malay boats, because, before most of his audience could remember—in 1855—he was racing for three days down the Straits of Malacca, over the very waters where the boats described in the paper were found, against a very fast American cotton ship. He was then only a youngster, but he had not forgotten that the result of the race was very satisfactory, for on the third day, when the fugitive ship was overtaken, the drum and fife band played "Yankee Doodle." It was very interesting to watch the development of boats on various coasts. The Malay coastline was about 1,300 miles in length, and a boat was found on the Eastern side differing from that in the Western and sheltered waters. He would have liked to have heard Professor Haddon tell the meeting a bit of old world history as to the origin of the Malay skill. Whence did the Malay come, and whence did he obtain his knowledge of boat building? The features of Malays looked as if they were of the Kalmuck race. Geologists said that at one time Sumatra was joined to the Malay Peninsula, and that the people went on from there; that then certain geological alterations in course of time formed the Straits. At one time they appeared to have travelled as far as Madagascar and the African coast on the one, and to Celebes on the other, side. These were subjects of great interest, as were all subjects connected with the history of the world, and how it was formed. The Malays certainly developed an extraordinary skill in the handling of small boats, and they were essentially a courageous and fighting race. Everyone had noticed that in the comparatively short life—as the history of nations went—of Japan, that nation had risen from mere boat-sailers, to become seamen on some of the biggest ships, and ships of the highest class. When he first went to Japan, half a century ago, the Japanese were kept by their rulers from employing vessels of size adapted to ocean navigation and were restricted to using small boats for coast and fishing purposes. Most people scouted the idea that Japanese could employ or manage such large vessels as would enable them to take long foreign voyages. But now these people managed the finest battle ships which the world had ever seen. They possessed the highest qualities as seamen, and the highest powers which could be exhibited by any naval race. In the Chino-Japanese war, the Japanese men froze to death at the post of honour, and no higher praise could be accorded to any race than to the Japanese, who were now, he was glad to say, our Allies. Wherever one went there was evidence that the boats were adapted to the particular conditions of wind and weather, and harbours of that particular part of the world. The coasts of the United Kingdom show a sufficient number of diverse types to afford an interesting study. The craft employed by the fishermen in the Hebrides were of one type, the Yorkshire coble was another. The Thames shrimpers used Bawley boats specially suited to their needs. The Portsmouth boatmen had in a long series of years devoloped a form that suits them, and passing over many intermediate types the fishermen from the east side of the Start have boats 22 feet by 7 that they launch even in heavy weather, and attend their crab pots off the Start Rocks, and in the swirling tide and seas of the Skerries Bank. These are probably the best boats of their size in the world for work in disturbed water. The Penzance luggers are world renowned, and some, not even of the largest size, have travelled to New Zealand. Therefore, wherever one went, the different characters of boats, made to meet local circumstances, was a very interesting study. One could see that different types of tide, raising different types of sea disturbance, caused men to modify through a series of generations the common original type of hollowed-out tree, until the splendid present-day sea-going ships were produced. As he was only a landsman, it was not in his province to talk on that subject, particularly as some of his audience might know a good deal more about boats than he did. But, owing to the circumstances in which his early youth was spent, the subject of boat sailing had always been a craze with him, and therefore, he thought it would not altogether be wasting the time of his audience if he made a few remarks on what, to him, was a very interesting subject. He felt all present would accord a hearty vote of thanks to Mr. Warington Smyth for his admirable paper, and in that vote he would include Mr. Skeat.

The resolution was carried unanimously, and the meeting terminated.

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Miscellaneous.

ECONOMIC CONDITIONS IN ITALY.

According to recent official statements, the economic situation in Italy is, on the whole, satisfactory. Agricultural methods, with a few exceptions, are improving in all the different departments. The importation of agricultural machinery has almost quadrupled in value in less than ten years, in spite of the development of native manufactories. Fifty factories of chemical fertilisers produce some 450,000,000 pounds, valued at £1,160,000. Italian industries have not, as those of other countries, suffered from depression; one proof of their vitality is the fact that the importation of coal last year increased to nearly 5,000,000 tons, notwithstanding the exceptional rise in prices. That is an increase of 1,000,000 tons in four years. The movement to utilise the abundant hydraulic power in Italy merits special attention. In January, 1899, it was estimated that the water-power already utilised represented a force of 300,000 horse-power. Since then numerous and very large hydraulic and hydro-electric installations have been made, and others are projected—among them the diverting of the Volturno, which would give 20,000 to 30,000 horse-power for the electric traction between Rome and Naples. Italy may be said to possess the largest installations in Europe for the utilisation of hydraulic forces. The yield of the mines and metallurgical establishments, which in 1897 was valued respectively at £2,470,000 and £8,800,000, has increased to £3,280,000 and to £12,160,000 respectively. In chemical industries, the development has been more rapid still; the value of the products in 1897 was £1,430,000; in 1900 their value was £2,430,000. The production of silk textiles is continually increasing. Up to 1890 the imports of silks exceeded the exports; since 1891, the situation has completely changed. In 1894 the excess of imports was 141 metric tons; in 1900 it was 746 metric tons. Great progress has also been made in the manufacture of cotton yarn and textiles; the number of spindles has more than doubled (from 900,000 to 2,000,000) in the last twenty years, while the number of looms has almost quadrupled (13,500 to 60,000). The value of the products has increased from £2,440,000 to £11,600,000. The number of workmen employed has nearly trebled (53,000 to 134,000). During the three years 1895-1897, the average value of machinery imported was £1,540,000; in 1900 it was valued at £3,165,000. The manufacture of sugar has assumed extraordinary proportions, and already suffices for two-thirds of the national consumption. The amount produced is valued at £772,000. The development of the merchant marine is also noticeable. In 1896, the movement in the Italian ports was represented by 6,892,000 tons under the national flag, and 7,700,000 tons under foreign flags. In 1900, there were 20,000,000 tons under the Italian flag, and 8,000,000 tons only under foreign flags.

Correspondence.

THE ORIGIN AND HISTORY OF CARRIAGES.

Mr. GEORGE A. THRUPP writes:—The paper by Mr. Albert Chancellor on the "Origin of Carriages" has been read to me, and I wish to bear my testimony to the admirable manner in which he has discharged his task. I wish to add, that the chariot of Lord Darnley, in the South Kensington Museum, is the earliest example extant of English coach-building. It was made for John Bligh, of Rathmore, in Ireland, created Lord Darnley in 1723. It is undoubtedly a type of the light chariots described by Dean Swift, and I consider that it was built prior to 1700, as the shape of the body, and the entire under-carriage, are certainly of the Louis Quatorze period.

The remarks of Sir George Birdwood on the solid wheels of wood and stone used in Hindostan and other parts of the world, merit the attention of every historian of coach-building.

MEETINGS OF THE SOCIETY.

COLONIAL SECTION.

Thursday afternoon, 4.30 o'clock:—

MAY 29.—"Western Australia: its Progress and Resources." By the HON. H. W. VENN. J. PARKER SMITH, M.P., will preside.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, MAY 20...Royal Institution, Albemarle-street, W., 3 p.m. Prof. Carl Pearson, "The Laws of Heredity, with Special Reference to Man." (Lecture I.)

Pathological, 20, Hanover-square, W., 8½ p.m. Annual Meeting,

Anthropological, 3, Hanover-square, W., 8½ p.m.

WEDNESDAY, MAY 21—Meteorological, 70, Victoria-street, S.W., 4½ p.m. 1. Mr. W. H. Dines and Capt. D. Wilson-Barker, "Report on the Wind Force Experiments on H.M.S. *Worcester* and at Stoneness Lighthouse." 2. Mr. Hugh Robert Mill, "The Cornish Dust Fall of January, 1902."

Microscopical, 20, Hanover-square, W., 8 p.m. Exhibition of "Freshwater Entomostraca," by D. J. Scourfield.

Pharmaceutical, 17, Bloomsbury-square, W.C., 8 p.m. Annual Meeting.

Archæological Association, 32, Sackville-st.W., 8p.m.

THURSDAY, MAY 22...**Royal Institution, Albemarle-street,** W., 3 p.m. Mr. H. Spielmann, "Contemporary British Sculpture." (Lecture I.)

Electrical Engineers (at the HOUSE OF THE SOCIETY OF ARTS), John-street, Adelphi, W.C., 8 p.m. Annual Meeting.

FRIDAY, MAY 23...Royal Institution, Albemarle-street, W., 8 p.m. Weekly Meeting. 9 p.m. Rev. Canon Ainger, "The Ethical Element in Shakespeare."

Clinical, 20, Hanover-square, W., 8½ p.m. Annual Meeting.

Physical, Chemical Society's Rooms, Burlington-house, W., 5 p.m.

SATURDAY, MAY 24...Royal Institution, Albemarle-street, W., 3 p.m. Prof. Brander Matthews, "The Development of the English Drama." (Lecture I.) The Art of the Dramatist.

Linnean, Burlington-house, W., 3 p.m. Annual Meeting.

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